Fay 019 Report file

760268ei

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Marine Seismic Operation FAY 019 July 17 - Aug 4, 1976

EQUIPMENT OPERATIONS

A. Air-Guns

The Air-Gun Array (20, 40 and 80 In^3) was dismantled due to maintenance difficulties of cables and the apparent lack of an improvement in record quality resulting from its use. The final technique usdd was to select a gun or guns that would provide us with adequate penetration and resolution for a specific area considering such parameters as water depth and sediment thicknesses to basement. John Grow's knowledge of past work made this a highly reliable technique.

Generally the 20 or 40 cubic inch guns were used in the coastal zones, 40 or 80 on the inner shelf, 80 and/or 160 on the outer shelf and continental slope and the 160 on the continental rise. Towing the guns separately made it quite simple to quickly make changes without a loss of data when failures occurred or when water depth or sediment thickness changed.

The guns had their usual problems of bad solenoids, open and shorted solenoid lines, leaky o - rings etc. But little or no data loss resulted from these failures since a 160 In^3 could be replaced by an 80 etc., for short periods of time with minimal deterioration of record quality.

The minisparker does produce false triggering of the bolt box but this was solved by placing .01μfd capacitors across the trigger inputs of the bolt box.

We did find it extremely important with regards to signal to noise to get the guns deep enough. This depth for the larger guns can be determined by allowing from 3 to 4 seconds between the firing of the guns until the air-bubble breaks the surface. For the smaller guns (40 & 20 In^3) 1 to 2 seconds worked well.

Again the sparker interfered with the air-gun data but this problem was almost entirely eliminated by carefully rerouting the deck cables from the SEI streamers to the lab.

B. Sparker (Teledyne)

The new 800 joule Teledyne sparker system (streamer, amplifier and filter, sparker array and power supply) produced outstanding records and operated quite reliably. The Trigger box card (located in the power supply) had numerous failure due to overheating and melting of the Trigger Card capacitor. This problem was solved by moving the powerssupply from the wet-lab to the back deck where the ambient temperature was about 70 to 100°F less.

Previous cruises also had a problem with intermittent triggering of the sparker. This was corrected by moving the Teledyne interface trigger box (this box converts the 5 volt trigger pulse from the EPC to a contact closure signal) from its location next to the sparker power supply down to the lab, placing it next to the EPC. This box needs a good 3 volt signal for keying which isn't possible due to line losses at its previous location.

Tips were clipped every 6 hours and generally showed slight even wear.

C. 3.5KHz Raytheon System

The system operated well in 1000Fm or less with good bottom track and correct PDD readout. For deeper depths it was secured and depths were taken from the sparker data.

I still have no idea why better data can't be obtained in deeper water. Hopefully a Hull mounted transducer will solve this problem.

D. Gradiometer

The signal to noise on this system did not come up to specs (8:1 instead of 15:) resulting in 2 to 3 Gamma fluctuations on the magnetometer chart recorder output. It was finally corrected by lifting a ground on the deck cable and by putting the recommended drogue shoot on. This gave a signal to noise of nearly 20:1 and reduced the magnetic fluctuations to less than a Gamma.

E. Compressors

No failures occurred on any of the compressors of any consequence Some OIC leaks are showing up (possibly gaskets) and one bleed hose broke. Other minor irritations are being discussed with price to see if he feels they are serious enough to be looked at when the ship arrives in Atlantic City.

F. Flat Bed Recorders

The EPC worked extremely well having only one problem with the paper take up rollers. This was solved by wrapping friction tape on the rollers until new foller o-rings can be sent to the ship.

The Raytheons were a real problem and both belt motor drive assemblies had to be rebuilt. Hopefully the installation of new clutch motors will solve this in the future.

G. SEI Streamers

Both streamers were used and worked well. One streamer shows a very odd flattening of the polyurethane tubing and was thought to be empty but closer inspection showed this to be not the case. I feel both streamers should be emptied, flushed and refilled this winter.

The depth controller worked very well this time and was extremely useful.

SEISMIC DATA

A. Air-Gun

Both shallow water (continental shelf and slope) and deepwater lower slope, rise and Abyssal Hills) data was excellent. Penetration in deep water was sufficient to follow the basement and on the slope reflectors were obtained below the multiples (1 to 3 seconds).

The data was filtered from 16 to 47 Hz for the larger guns and 32 to 76 Hz for the smaller guns. The sweep was usually 5 seconds with a firing rate of 10 seconds.

B. Sparker

This data was outstanding with penetration usually between .2 to .5 seconds on a half-second sweep. Signal to noise was tremendous even in poor seas and also at ship speeds up to 9 knots.

The data was filtered from 320 to 1060 Hz.